

ABSTRACT OF THE DISCLOSURE

A probe having a pair of electrodes is excited with a low A.C. voltage at a relatively high and relatively low frequency and the difference in current measured. The difference dZ between bulk fluid and interfacial impedance is computed from the current difference. The rate of change ΔdZ of the impedance difference is determined over a time interval and a physiochemical parameter (X) determined when ΔdZ is positive from lubricant with known amounts of constituents selected from the group consisting of (a) Phosphorus, Oxygen and Carbon (P-O-C); (b) Phosphorous and double bond Sulphur (P = S); (c) Zincdialkyldithiophosphate (ZDDP); and (d) the Total Base Number TBN by measuring CaCO_3 (CO_3), from a table of the selected parameter X versus dZ in a first region of the table and determining RUL from a table of RUL versus parameter X (X_1). The value of the selected parameter X when ΔdZ is negative is determined from a second region of the table of X versus dZ . The rate of change Ψ of X over a time interval is determined and RUL determined from a known value of X_{EOL} for the end of the lubricant life.